Appl. No. 10/767,247
Amdt. dated March 27, 2007
Reply to Office Action of November 27, 2006

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1.   (Currently Amended) A method of controlling a storage system having primary storage volumes and replication storage volumes which replication storage volumes improve reliability of the storage system, the method comprising:

determining a boundary of a failure of the primary storage volumes and the replication storage volumes, the boundary being determined using error correction group and controller group information of the primary storage volumes and replication storage volumes to divide the storage volumes into failure groups of logical volumes; and

using the determined failure boundary and a type of content to be stored to assign replication storage volumes, a first type of content to be stored having replication storage volumes assigned across the failure boundary, and a second type of content to be stored having replication storage volume within the failure boundary. to assure that at least some of the replication storage volumes are outside the failure boundary.

2.   (Previously Presented) A method as in claim 1 wherein the failure boundary is determined by software managing the storage system.

3.   (Original) A method as in claim 2 wherein a logical address of locations in the storage system is used to determine the failure boundary.

4.   (Original) A method as in claim 1 wherein there are a plurality of failure boundaries and each is determined by software managing the storage system.

5.   (Original) A method as in claim 4 wherein information regarding the failure boundaries is stored in a server.

6.   (Original) A method as in claim 5 wherein the information regarding the failure boundaries is stored as a table in the server.

7.   (Original) A method as in claim 5 wherein information regarding the failure boundaries also includes information about reliability of the primary storage volumes and the replication storage volumes.

8.   (Previously Presented) A method as in claim 1 wherein the boundary of the failure is used to assign storage volumes as replication storage volumes for a particular operation of the storage system.

9.   (Previously Presented) A method as in claim 8 wherein information relating to the boundary of the failure includes error correction group and controller group information for each of the primary storage volumes and the replication storage volumes.

10.   (Currently Amended) A storage system comprising:

a set of primary storage volumes;

a set of replication storage volumes for improving reliability of the storage system;

a memory for storing information regarding at least one boundary of a failure of the primary storage volumes and the replication storage volumes, the at least one boundary being determined using error correction group and controller group information for the set of primary storage volumes and the set of replication storage volumes to divide the storage volumes into failure groups of logical volumes; and

a controller coupled to the memory for assigning replication storage volumes using the at least one determined failure boundary and a type of content to be stored, a first type of content to be stored having replication storage volumes assigned across at least one failure boundary, and a second type of content to be stored having replication storage volume within one one failure boundary. to assure that at least some of the replication storage volumes are outside the failure boundary.

11.   (Previously Presented) A storage system as in claim 10 wherein the memory storing information regarding the at least one boundary of a failure is in a server and the server is used to manage the storage system.

12.   (Original) A storage system as in claim 11 wherein the information regarding the failure boundaries is stored as a table.

13.   (Original) A storage system as in claim 11 wherein information regarding the failure boundaries also includes information about reliability of the primary and replication storage volumes.

14.   (Original) A storage system as in claim 11 wherein information regarding the failure boundaries also includes information about performance of the primary and replication storage volumes.

15.   (Previously Presented) A method as in claim 1 wherein the boundary of a failure is determined based on logical addresses.

16.   (Previously Presented) A method as in claim 15 wherein the logical addresses correspond to volume numbers or error correction groups.

17.   (Previously Presented) A method as in claim 1 further comprising:

        performing a replication process between the primary replication volumes and secondary storage volumes, the replication process utilizing a daily or hybrid backup implementation.

18.   (Previously Presented) A storage system as in claim 10 wherein the at least one boundary of the failure is determined based on logical addresses.

19.   (Previously Presented) A storage system as in claim 18 wherein the logical addresses correspond to volume numbers or error correction groups.

20.   (Previously Presented) A storage system as in claim 10 wherein the controller further performs a replication process between the primary replication volumes and secondary storage volumes, the replication process utilizing a daily or hybrid backup implementation.

21.   (Previously Presented) A method as in claim 1 wherein the primary storage volumes and replication storage volumes are horizontally or are vertically addressed.

22.   (Previously Presented) A storage system as in claim 10 wherein the primary storage volumes and replication storage volumes are horizontally or are vertically addressed.

23.   (New) A method as in claim 1 wherein the first type of content to be stored is a full backup of data and the second type of content to be stored is a differential backup of data.

24.   (New) A storage system as in claim 10 wherein the first type of content to be stored is a full backup of data and the second type of content to be stored is a differential backup of data.